

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/013989

A. CLASSIFICATION OF SUBJECT MATTER Int.Cl ⁷ C07D213/69, 309/38, 311/56, 413/10, 407/10, 215/22, A61K31/366, 31/37, 31/4412, 31/4439, 31/4704, 31/5377, 7/06, A61P43/00, 17/14, 1/16, 11/00, 13/12, 17/02, 9/10, 9/12 According to International Patent Classification (IPC) or to both national classification and IPC														
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) Int.Cl ⁷ C07D213/69, 309/38, 311/56, 413/10, 407/10, 215/22, A61K31/366, 31/37, 31/4412, 31/4439, 31/4704, 31/5377, 7/06 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CAPLUS (STN), CAOLD (STN), REGISTRY (STN), MEDLINE (STN), EMBASE (STN)														
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>JP 2001-89412 A (Otsuka Pharmaceutical Co., Ltd.), 03 April, 2001 (03.04.01), Example 144 (Family: none)</td> <td>1-22, 25, 28, 30, 34, 37, 39, 41, 42</td> </tr> <tr> <td>A</td> <td>JP 2002-371078 A (Sankyo Co., Ltd.), 26 December, 2002 (26.12.02), Table 2 (Family: none)</td> <td>1-22, 25, 28, 30, 34, 37, 39, 41, 42</td> </tr> <tr> <td>A</td> <td>JP 2001-504080 A (Cornell Research Foundation, Inc.), 27 March, 2001 (27.03.01), & WO 96/22021 A1 & AU 9647586 A & EP 808103 A1</td> <td>1-22, 25, 28, 30, 34, 37, 39, 41, 42</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	A	JP 2001-89412 A (Otsuka Pharmaceutical Co., Ltd.), 03 April, 2001 (03.04.01), Example 144 (Family: none)	1-22, 25, 28, 30, 34, 37, 39, 41, 42	A	JP 2002-371078 A (Sankyo Co., Ltd.), 26 December, 2002 (26.12.02), Table 2 (Family: none)	1-22, 25, 28, 30, 34, 37, 39, 41, 42	A	JP 2001-504080 A (Cornell Research Foundation, Inc.), 27 March, 2001 (27.03.01), & WO 96/22021 A1 & AU 9647586 A & EP 808103 A1	1-22, 25, 28, 30, 34, 37, 39, 41, 42
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.												
A	JP 2001-89412 A (Otsuka Pharmaceutical Co., Ltd.), 03 April, 2001 (03.04.01), Example 144 (Family: none)	1-22, 25, 28, 30, 34, 37, 39, 41, 42												
A	JP 2002-371078 A (Sankyo Co., Ltd.), 26 December, 2002 (26.12.02), Table 2 (Family: none)	1-22, 25, 28, 30, 34, 37, 39, 41, 42												
A	JP 2001-504080 A (Cornell Research Foundation, Inc.), 27 March, 2001 (27.03.01), & WO 96/22021 A1 & AU 9647586 A & EP 808103 A1	1-22, 25, 28, 30, 34, 37, 39, 41, 42												
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.														
<table border="0"> <tr> <td> * Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed </td> <td> "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family </td> </tr> </table>			* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family										
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family													
Date of the actual completion of the international search 16 December, 2004 (16.12.04)		Date of mailing of the international search report 11 January, 2005 (11.01.05)												
Name and mailing address of the ISA/ Japanese Patent Office		Authorized officer												
Facsimile No.		Telephone No.												

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/013989

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2002-541253 A (SmithKline Beecham Corp.), 03 December, 2002 (03.12.02), & WO 00/61576 A1 & EP 1169317 A1 & EP 1169317 B1 & AT 231143 E & ES 2187473 T3 & US 6465493 B1	1-22, 25, 28, 30, 34, 37, 39, 41, 42
X A	WO 01/79187 A2 (CYTOVIA, INC.), 25 October, 2001 (25.10.01), CAS RN: compounds of 369389-17-3, 369389-19-5, 369389-21-9, 369389-63-9, 369389-65-1 & WO 01/79187 A3 & US 2002/010169 A1 & EP 1324993 A2	6, 9 1-5, 7, 8, 10-22, 25, 28, 30, 34, 37, 39, 41, 42
X A	RACHEDI, Y. et al., Synthesis of 4-hydroxy-6-methyl-3- β -arylpropionyl-2-pyrones by selective catalytic hydrogenation of 3-cinnamoyl-4-hydroxy-6-methyl-2-pyrones, Synthetic Communications, 1989, Vol.19, No.20, p.3437-42, CAS RN: compound of 128145-82-4 & Chemical abstracts 113:58843	6, 9 1-5, 7, 8, 10-22, 25, 28, 30, 34, 37, 39, 41, 42
X A	JP 41-1412 B1 (Research Institute For Production Development), 03 February, 1966 (03.02.66), CAS RN: compound of 5169-90-4 (Family: none)	6 1-5, 7-22, 25, 28, 30, 34, 37, 39, 41, 42
X A	JP 50-46666 A (Toray Industries, Inc.), 25 April, 1975 (25.04.75), CAS RN: compound of 57339-78-3 (Family: none)	14 1-13, 15-22, 25, 28, 30, 34, 37, 39, 41, 42
X A	UKITA, Chunoshin et al., In vitro screening of tricarbonylmethane and related compounds for their antitumor effect by cylinder agar plate method, Chemical & Pharmaceutical Bulletin, 1961, Vol.8, p.1016-20, CAS RN: compound of 94578-81-1 & Chemical abstracts 58:48844	14 1-13, 15-22, 25, 28, 30, 34, 37, 39, 41, 42
X A	KALECHITS, G.V. et al., Synthesis and properties of 3-cinnamoyl-4-hydroxy-2-quinolone, Russian Journal of General Chemistry (Translation of Zhurnal Obshchei Khimii), 2001, Vol.71, No.8, pages 1257 to 1260, CAS RN: compound of 428818-04-6 & Chemical abstracts 136:401624	22 1-21, 25, 28, 30, 34, 37, 39, 41, 42
A	US 4017633 A (SMITHKLINE CORP.), 12 April, 1977 (12.04.77), (Family: none)	1-22, 25, 28, 30, 34, 37, 39, 41, 42

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/013989

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 97/35565 A1 (Toray Industries, Inc.), 02 October, 1997 (02.10.97), & CA 2222471 AA & AU 9720436 A1 & AU 721881 B2 & EP 841063 A1 & CN 1194580 A & NO 9705439 A & US 6215016 B1	1-22, 25, 28, 30, 34, 37, 39, 41, 42
A	JP 3-503635 A (The Upjohn Co.), 15 August, 1991 (15.08.91), & WO 89/07939 A2 & WO 89/07939 A3 & AU 8940747 A1 & EP 403535 A1 & DK 9001956 A	1-22, 25, 28, 30, 34, 37, 39, 41, 42
A	JP 9-227547 A (Mitsui Toatsu Chemicals, Inc.), 02 September, 1997 (02.09.97), (Family: none)	1-22, 25, 28, 30, 34, 37, 39, 41, 42
P,A	JP 2004-123621 A (Sumitomo Chemical Co., Ltd.), 22 April, 2004 (22.04.04), (Family: none)	1-3, 10, 11, 13
P,A	JP 2004-123620 A (Sumitomo Chemical Co., Ltd.), 22 April, 2004 (22.04.04), (Family: none)	1-3, 10, 12, 14
P,A	WO 03/080592 A1 (Sumitomo Chemical Co., Ltd.), 02 October, 2003 (02.10.03), & JP 2004-175780 A	1-5, 7, 8

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/013989

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: (see extra sheet.)
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 23, 24, 26, 27, 29, 31 to 33, 35, 36, 38 and 40 relating to methods for treatment of the human body by therapy are described.
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

The technical feature common to the inventions of claims 1-22, 25, 28, 30, 34, 37, 39, 41 and 42 is compounds having as the partial structure ring structures represented by the general formula (i):

(i)

(wherein A is a benzene ring or a pyridine ring; and W_a is O or N), but compounds having such partial structures are publicly known (see, e.g., WO 01/79187 A2 (CYTOVIA, INC.) 25.October, 2001) (25.10.01).

(continued to extra sheet)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/013989

Continuation of Box No.III of continuation of first sheet(2)

Such being the case, the inventions of claims 1-22, 25, 28, 30, 34, 37, 39, 41 and 42 have no common technical feature beyond the prior art, and are therefore not so linked as to form a single general inventive concept.

(Concerning the scope of search)

Claim 1 includes extremely many compounds as active ingredients of pharmaceutical compositions. However, few of the claimed compounds are supported by the description within the meaning of PCT Article 6 and disclosed within the meaning of PCT Article 5.

In this international search report, search has been made on the parts supported by the description and disclosed therein.

The same applies to claims 2-6, 10-12, 15, 16, 19, 20, 25, 28, 30, 34, 37 and 39.

Search on claim 12 has been made, in view of the disclosure of the description, on the basis of the interpretation that the wording "with the proviso thatXc group.... are excluded" at the end in the definition of "group X₅" in claim 12 is an error and should be "with the proviso thatXe group.... are excluded".

Continuation of Box No.II-1 of continuation of first sheet(2)

Claims 23, 24, 26, 27, 29, 31-33, 35, 36, 38 and 40